

**REMARKS**

In response to the Office Action dated May 18, 2004, Applicant respectfully requests reconsideration based on the above claim amendments and the following remarks. Applicant respectfully submits that the claims as presented are in condition for allowance.

Claims 1-43 are pending in the application. Claims 1-7, 14-20, and 29-36 have been canceled. No claims have been amended, and no new claims have been added. Claims 8-13, 21-28, and 37-43 will therefore be pending upon entry of the above amendments.

Claim 36 of the present application stands rejected in the office action under 35 U.S.C. §112, second paragraph, as being indefinite. Claim 36 has been canceled in this reply, thus rendering the rejection under 35 U.S.C. §112 moot.

Claims 1, 3, 4, 6, 14, 16, 17, 19, 29, 31, 32, and 34 of the present application stand rejected in the office action under 35 U.S.C. §102(b) as being anticipated by U.S. patent no. 5,148,138 (Miyata). Claims 1, 3, 4, 6, 14, 16, 17, 19, 29, 31, 32, and 34 have been canceled in this reply, thus rendering the rejections under 35 U.S.C. §102(b) moot.

Claims 2, 5, 7, 20, 30 and 35 of the present application stand rejected in the office action under 35 U.S.C. §103(a) as being obvious over Miyata in view of U.S. patent no. 4,638,281 (Baermann). Claims 2, 5, 7, 20 and 35 have been canceled in this reply, thus rendering the rejections under 35 U.S.C. § 103(a) moot.

Claims 8, 10, 11, 12, 18, 21, 23-26, 28, 33, 37, 39 and 40-42 of the present application stand rejected in the office action under 35 U.S.C. § 103(a) as being obvious over Miyata in view of U.S. patent no. 4,727,327 (Toyoshima et. al.). Claim 18 and 33 have been canceled in this reply, thus rendering the rejections under 35 U.S.C. § 103(a) moot. Applicants respectfully submit that claims 8, 10, 11, 12, 21, 23-26, 28, 37, 39 and 40-42 are patentably distinct from the noted references for at least the following reasons.

Claims 8, 21, and 37, respectively, recite a magnetic roll, methods for increasing the magnetic field strength of a magnetic roll, and methods for increasing magnetic uniformity of a magnetic roll. In the reprographics field, recent demand for high image quality requires magnetic rolls with higher magnetic field strength in order to attract finer toner particles. (see specification at p.1-2). At the same time, the magnetic rolls also require magnetic field uniformity to avoid undesirable inconsistency across the reprographic image. (see

specification at p.2). Preferred embodiments of the present invention achieve the goal of increasing the magnetic field strength of a magnetic roll “in the direction *outward from* and normal to a layer of *ferritic magnet*,” and achieve the goal of increasing the magnetic field uniformity of a magnetic roll “in the direction *outward from* and normal to a layer of *ferritic magnet*,” as claimed in claims 21, and 8 and 37, respectively.

The Miyata reference, cited by the Examiner, disclosed a cylindrical magnet apparatus, suitable for use in nuclear magnetic resonance (NMR) imaging and NMR-CT, used for producing an *internal* magnetic field in a predetermined direction “*within the cylindrical bore*” of the apparatus. (See col. 1, lns. 5-8 and lns. 13-15). Miyata’s focus was on an internal magnetic field in the direction *inward from* the magnets. (Col. 1, ln. 8).

Miyata taught that “[t]o produce a uniform magnetic field in a sufficiently wide region of a cylindrical space large enough to accommodate a major portion of the human body, *it is known* to use a plurality of coaxially arranged dipole ring magnets.” (Col. 1, lns. 18-22). Thus, the aim of Miyata’s invention was not to improve the magnetic field uniformity and magnetic field strength of the magnet assembly. Rather, Miyata sought only to provide a less expensive and lighter weight magnetic assembly by using both an “inexpensive” ferrite magnet and a rare earth magnet “to reduce the total weight of the apparatus.” (Col. 2, lns 21-27). Indeed, Miyata’s express reason for using both ferrite and rare earth alloy magnets was to acquire a “*good balance between the material cost and the gross weight*” of the assembly. (Col. 2, lns. 27-32).

The Miyata reference, however, failed to recognize the benefits of a layered ferritic, rare earth magnet to achieving the goals of increased magnetic field uniformity and magnetic field strength *in the direction outward from* and normal to the layer of ferritic magnet. In other words, Miyata’s invention was merely focused on reducing weight and cost by using ferritic and rare earth alloy magnets to create a magnetic field in an *inward* direction (*i.e.*, towards a patient lying within an NMR apparatus).

In preferred embodiments of the present invention, as recited in claims 8 and 37, the layered magnet provides a surprisingly more uniform magnetic field “in the direction *outward from* and normal to the *layer of ferritic magnet*,” and a substantially greater magnetic field strength “in the direction *outward from* and normal to *the layer of ferritic magnet*,” as recited in claim 21.

The focus on the external magnetic field is important. The ferritic layers are positioned *radially outward* relative to the rare earth magnets and serve to filter the magnetic field strength peaks produced by the rare earth magnets thereby creating a more uniform and stronger magnetic field “in the direction *outward from* and normal to *the layer of ferritic magnet*.”

It is clear that Miyata did not recognize these benefits. Illustrative is the orientation of Miyata’s magnets in view of the purpose of Miyata’s invention to produce an internal magnetic field. (see, *e.g.*, FIG. 1 & 5, col. 2, ln. 60 - col. 3, ln. 1). Miyata’s ferrite magnets are positioned on the radially outer side (col. 2, ln. 67- col. 3, ln. 1). And Miyata focused on the magnetic field *inward to* and normal to a *rare earth alloy magnet* and therefore did not recognize, teach or suggest any benefit *outward from* and normal to the *ferritic magnet*. Thus, Miyata’s ferritic magnets were not utilized to act as a filter of the peaks produced from the rare earth magnets. Consequently, Miyata and those of skill in the art failed to appreciate the potential benefits to applications such as magnetic rolls that use *external* magnetic fields, as claimed in claims 8, 21 and 37.

Further, the Examiner indicated in the Office Action that Miyata also “fails to disclose a cylindrical core.” This is not surprising in view of the purpose of the Miyata invention, to produce an internal magnetic field “within the cylindrical bore,” or empty space where a patient lies while undergoing NMR imaging.

The Toyoshima reference does not remedy any of these deficiencies. As acknowledged by the Examiner, the Toyoshima invention is also directed to “NMR imaging” and consequently was also concerned with creating an *internal* magnetic field “for obtaining image information from a living body under examination.” Further, Toyoshima nowhere discloses the use of ferritic magnets. Moreover, the Examiner indicated in the Office Action that the Toyoshima reference “discloses a nonmagnetic core 38.” But the Toyoshima reference does not disclose a “cylindrical core” having “at least one layered magnet” superposed thereon, let alone a cylindrical core “adapted for use with a reprographics apparatus.” Rather, Toyoshima discloses a bobbin 38, which is a cylindrical spool-like device around which a “gradient field coil 39 is wound.” The bobbin of Toyoshima is not a “cylindrical core” that has “at least one layered magnet” superposed thereon.

Applicant therefore respectfully submits that neither Miyata nor Toyoshima, either alone or in combination, teach or suggest the magnetic roll, methods for increasing the magnetic field strength of a magnetic roll, and methods for increasing magnetic uniformity of a magnetic roll as claimed in claims 8, 21, and 37 respectively.

In fact, Applicant respectfully notes that the Examiner has not expressly stated in the office action that the noted references teach or suggest the limitations of claims 8, 21, and 37 and therefore respectfully submits that claims 8, 21, and 37 are patentably distinct from Miyata and Toyoshima.

Moreover, Applicant respectfully submits that there is no suggestion or motivation in either Miyata and Toyoshima, or in the knowledge generally available to one of ordinary skill in the art, to arrive at the inventions recited in claims 8, 21, and 37 of the present application.

Applicant respectfully notes that magnetic rolls having increased magnetic field uniformity and increased magnetic field strength are significant, ongoing needs in the field of reprographics. Applicant respectfully submits that the fact that the inventions recited in claims 8, 21, and 37 may address these needs is actually an indication of the non-obviousness of the invention, rather than an indication that earlier prior art had already taught or suggested same.

Applicant therefore respectfully submits that claims 8, 21, and 37 of the present application are patentably distinct from Miyata and Toyoshima for this reason, as well as the previously-stated reasons.

Withdrawal of the rejections of claims 8, 21, and 37 (and claims 9-13, 22-28, and 38-43, which depend from claims 8, 21, and 37, respectively) under 35 U.S.C. § 103(a) is respectfully requested in view of the above remarks. A notice of allowability is respectfully requested in this case.


Claims 9, 13, 22, 27, 38 and 43 of the present application stand rejected in the office action under 35 U.S.C. §103(a) as being obvious over Miyata in view of Toyoshima, et al., and further in view of Baermann. The Examiner's rejections of claims 8, 21, and 37 have been addressed above, and Applicant respectfully submits that dependent claims 9, 13, 22, 27, 38 and 43 are allowable for the same reasons as set forth above with respect to claims 8, 21, and 37. Baermann does not overcome the deficiencies of the Miyata reference and the Toyoshima reference.

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**PATENT**

Claim 15 of the present application stands rejected in the office action under 35 U.S.C. §103(a) as being obvious over Miyata in view of Applicant's admitted prior art. Claim 15 has been canceled in this reply, thus rendering the rejection under 35 U.S.C. §103(a) moot.

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